

DETAILED ACTION

1. This Office Action is responsive to the amendment filed on 3/1/2010.
2. The objections and rejections not addressed below are deemed withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/1/2010 has been entered.

Claim Objections

5. Applicant is advised that should claims 1, 3, 16, and 17 be found allowable, claims 14, 15, 18, and 19 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Independent claims 14 and 15 are verbatim repetitions of independent claims 1 and 3, respectively. By extension, dependent claims 18 and 19 are verbatim repetitions of claims 16 and 17, respectively.

Claim Rejections - 35 USC § 112

6. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The rejection stands as per the reasons outlined in paragraph 6 of the Office Action mailed on 12/3/2009, incorporated herein by reference.

7. Claims 17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 17 and 19 recite the limitation "the process for producing foamable crosslinked polymers" in claims 3 and 15, respectively. There is insufficient antecedent basis for this limitation in the claim. Claims 3 and 15 both recite foamable crosslinked polymers; neither parent claim recites a process.

Claim Rejections - 35 USC § 103

9. Claims 1-5, 7, 8, and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geyer et al, US5928459, in view of Tada et al, US5225449.

10. The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

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11. Regarding new claims 16-19: Tada discloses the preparation of polymethacrylimide foams from copolymers containing 5 to 50% TBMA, overlapping the claimed range. It has been held that in the case where the claimed ranges overlap or lie inside ranges disclosed in the prior art, a *prima facie* case of obviousness exists; see *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (MPEP § 2144.05). It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to choose the overlapping portion of the range disclosed by Tada and the claimed range.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Stein et al, WO 03/020804.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Wu et al, US6396451.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

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14. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Zacharopoulos et al, US2004/0034932.

The rejection stands as per the reasons outlined in the previous Office Actions, incorporated herein by reference.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Nieuwendijk et al, US4847908.

The rejection stands as per the reasons outlined in the previous Office Action, incorporated herein by reference.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Geyer et al, US5928459, and Tada et al, US5225449, as applied to claim 5 above, and further in view of Baumann et al, US2002/0037955.

The rejection stands as per the reasons outlined in the previous Office Action, incorporated herein by reference.

Response to Arguments

17. Applicant's arguments filed 3/1/2010 have been fully considered but they are not persuasive.

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18. Applicant's arguments regarding the rejection of claims under 35 U.S.C. 112, 1st paragraph have already been addressed in the Advisory Action mailed on 3/11/2010, incorporated herein by reference.

19. Regarding the amount of TBMA/TBA: Applicant argues that it would not have been obvious to modify the composition of Geyer by adding 10 pbw t-butyl methacrylate (TBMA) in view of the teachings of Tada. As discussed in the previous Office Actions, Tada teaches the inclusion of t-butyl methacrylate (TBMA) in foams made from copolymers of methacrylic acid and methacrylonitrile, i.e. polymethacrylimide foams. The following data is taken from Table 1 (Columns 5 and 6) of Tada:

	Polymerizable unsaturated monomer (part by weight)					Molar ratio of monomers*	Performance of foams		
	TBMA	TBA	MAA	MAN	AN		Appearance	Density (g/cm ³)	Amount of absorbed moisture (wt. %)
Comparison	67	—	—	3	—	1.00/1.04	Non-uniform foam	0.019	4.58
"	60	—	6.5	33.5	—	1.00/1.00	Non-uniform foam	0.020	4.69
Present invention	50	—	14.8	35.2	—	1.00/1.00	Uniform foam having some- what large cells	0.032	4.80
"	30	—	31.4	38.6	—	1.00/1.00	Uniform white foam	0.043	4.21
"	30	—	30.0	40.0	—	1.00/1.07	Uniform white foam	0.045	4.31
"	20	—	35.0	45.0	—	1.00/1.23	White foam having a fine texture	0.056	4.15
"	10	—	47.9	42.1	—	1.00/1.00	White foam having a fine texture	0.067	4.10

Samples 3-7 in the above Table show that the amount of TBMA included in the polymer foam is a result effective variable. As the amount of TBMA decreases in the prior art's inventive examples, two effects are observed: 1) the density of the foam increases, and 2) the amount of absorbed moisture decreases. It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the composition of Geyer by including 5-50% TBMA, as taught by Tada, in order to obtain a polymer foam having the desired properties of density and moisture absorption.

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20. Regarding the allegedly unexpected results: Applicant's arguments regarding the allegedly unexpected results obtained due to the inclusion of 0.01-15 pbw TBMA (for claims 1, 3-15) have already been addressed in the Office Action mailed on 12/03/2009, incorporated herein by reference.

21. Regarding the claimed range of 0.01-4.99 pbw TBMA (for claim 2): It has been held that a *prima facie* case of obviousness exists where the claimed ranges and the prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties, see *Titanium Metals Corp. of America v. Banner* 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Applicant has not provided evidence that the properties of a foam with a TBMA content of 4.99 are different from the properties of a foam having a TBMA content of 5, as rendered obvious by the prior art.

22. Regarding the claimed range of 1 to 10 pbw TBMA (for claims 16-19): The examiner takes the position that the data cited by applicant does not demonstrate the criticality of the claimed range. Applicant compares the inventive examples in the specification to a comparative example which contains 20 pbw TBMA, double the claimed upper limit of 10 pbw. However, as discussed above, it was already known in the art to vary the amount TBMA in polymethacrylimide foams within the range of 5-50% by weight to adjust the properties of density and moisture absorption of the foam. Applicant has not demonstrated the criticality of the claimed upper limit of 10 pbw.

23. Applicant states that superior thermo-mechanical properties are obtained when the amount of TBMA is within the claimed range; however, no evidence has been

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provided to substantiate this claim. Applicant therefore has not demonstrated that unexpected results are obtained in terms of the thermo-mechanical properties of the claimed foam.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Lenihan whose telephone number is (571)270-5452. The examiner can normally be reached on Monday through Thursday from 7:30-5:00 PM, and on alternate Fridays from 7:30-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Primary Examiner, Art Unit 1796

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